

CLAIMS

The invention claimed is:

1. A method of treating a non-sputtered region of a PVD target, comprising:
 - forming a pattern of projections along the non-sputtered region;
 - bending the projections; and
 - exposing the projections to a pressurized stream of particles to form microstructures on the projections.
2. The method of claim 1 wherein the target is a monolithic target.
3. The method of claim 1 further comprising bonding the target to a backing plate to incorporate the target into a target/backing plate construction.
4. The method of claim 3 wherein the bonding the target to the backing plate occurs prior to forming the pattern of projections along the non-sputtered region.

5. The method of claim 4 wherein the target has a sidewall; wherein the non-sputtered region comprises at least a portion of the sidewall of the target; wherein the backing plate has a sidewall, and further comprising forming the pattern of projections to extend along at least a portion of the sidewall of the backing plate and at least along a portion of the sidewall of the target.

6. The method of claim 1 wherein the projections are bent prior to exposing the projections to the particles.

7. The method of claim 1 wherein the projections are bent after exposing the projections to the particles.

8. The method of claim 1 wherein the pattern of projections is formed as a scroll pattern by utilizing a CNC tool to cut into the non-sputtered region of the target.

9. The method of claim 1 wherein the particles comprise one or both of solid H₂O and solid CO₂.

10. The method of claim 1 wherein the particles comprise one or both of silicon carbide and aluminum oxide; and wherein the exposure of the non-sputtered region to the pressurized stream comprises utilization of a pressure of less than 20 psi within the stream during the exposure.
11. The method of claim 1 wherein the particles comprise one or both of silicon carbide and aluminum oxide; and further comprising brushing the non-sputtered region after the exposure to the particles.
12. The method of claim 1 wherein the particles comprise one or both of silicon carbide and aluminum oxide; and further comprising exposing the non-sputtered region to a stream of cleaning agent after the exposure to the particles.
13. The method of claim 12 wherein the cleaning agent comprises one or both of solid H₂O and solid CO₂.
14. The method of claim 1 wherein the bent projections have bases, wherein the non-sputtered region of the target has a surface extending between the bases of the bent projections, and wherein the bent projections have a maximum height above the surface of from about 0.0001 inches to about 0.01 inches.

15. The method of claim 1 wherein a periodic repeat of the bent projections across the non-sputtered region occurs in a distance of from about 0.0001 inches to about 1 inch.

16. A PVD target having a sidewall proximate a sputtering face, wherein the sidewall forms a lateral periphery of the target, the target comprising a pattern of curved projections along the sidewall which form cavities that open laterally along the sidewall.

17. The target of claim 16 wherein the target is part of a target/backing plate construction.

18. The target/backing plate construction of claim 17 wherein the backing plate has a sidewall and wherein the pattern of curved projections extends along the sidewall of the backing plate.

19. The target/backing plate construction of claim 18 wherein the backing plate has a flange and wherein the pattern of curved projections extends along the flange of the backing plate.

20. The target of claim 16 wherein the curved projections have bases, wherein the sidewall has a surface extending between the bases of the curved projections, and wherein the curved projections have a maximum height above the sidewall surface of from about 0.0001 inches to about 0.01 inches.

21. The target of claim 16 wherein a periodic repeat of the curved projections across the sidewall occurs in a distance of from about 0.0001 inches to about 1 inch.

22. The target of claim 16 further comprising bead-blast-formed microstructures on the curved projections.

23. The target of claim 16 wherein the sputtering surface is defined as an upper surface; and wherein the cavities open upwardly.

24. The target of claim 16 wherein the sputtering surface is defined as an upper surface; and wherein the cavities open downwardly.

25. The target of claim 16 wherein the sputtering surface is defined as an upper surface; and wherein the cavities open sidewardly.

26. The target of claim 16 further comprising a flange spaced from the sputtering face by the sidewall, the flange having a surface, and wherein the pattern of curved projections extends along at least a portion of the surface of the flange.

27. A PVD target/backing plate construction having a sidewall proximate a sputtering face, comprising:

a repeating pattern of receptacles along the sidewall, the receptacles having inner surfaces along an interior periphery of the receptacles; and

microstructures on the inner surfaces of the receptacles.

28. The target/backing plate construction of claim 27 wherein a portion of the sidewall is comprised by the target, and wherein the pattern of receptacles is along the portion of the sidewall comprised by the target.

29. The target/backing plate construction of claim 28 wherein a portion of the sidewall is comprised by the backing plate, and wherein the pattern of receptacles is along the portion of the sidewall comprised by the backing plate.

30. The target/backing plate construction of claim 27 wherein a portion of the sidewall is comprised by the backing plate, and wherein the pattern of receptacles is along the portion of the sidewall comprised by the backing plate.

31. The target/backing plate construction of claim 27 wherein the receptacles are defined by bent projections extending from the sidewall; wherein the bent projections have bases, wherein the sidewall has a surface extending between the bases of the bent projections, and wherein the bent projections have a maximum height above the sidewall surface of from about 0.0001 inches to about 0.01 inches.

32. The target/backing plate construction of claim 31 wherein a periodic repeat of the bent projections occurs in a distance of from about 0.0001 inches to about 1 inch.

33. The target/backing plate construction of claim 27 wherein the microstructures correspond to bead-blasted structures.

34. The target/backing plate construction of claim 27 further comprising a flange spaced from the sputtering face by the sidewall, the flange having a surface, and wherein the repeating pattern of receptacles extends along at least a portion of the surface of the flange.

35. The target/backing plate construction of claim 33 wherein the microstructures are on the receptacles that extend along at least a portion of the surface of the flange.